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Mr. Shirley Murphy's Report to the Local Government Board on
the Sanitary Condition of Gravesend.

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R. THORNE THORNE,
Assistant Medical Officer,
August 22, 1885.

Gravesend is a Municipal Borough and Registration District, having in 1881 a population of 23,302 persons in 4,019 houses. It is situated on the right bank of the Thames, 20 miles below the metropolis. Mr. Netten Radcliffe, reporting on this town in 1877, gives the following account of its topographical and geological circumstances:—

"The town of Gravesend, in which almost the whole of the population and houses of the borough are collected, occupies the slopes and summit of a hill which rises from the border of the Thames to an altitude of 175 feet above Ordnance datum. On the north the town extends along the bank of the river, and is bounded by the stream; on the south it is bounded by the open country; on the east by the marshes which fringe the right bank of the river in that direction, and by the cultivated rising ground above them; and on the west it is separated by meadow and garden land, with the exception of certain lines of buildings on the main connecting thoroughfares, from the Urban Sanitary District of Northfleet, including Northfleet and the village of Perry Street. With the exception of the portion of the town immediately on the banks of the river and about the principal street, the High Street, where the buildings are huddled together about narrow thoroughfares, passages, and courts (some of the latter closed), after the fashion of old seaport towns, the houses have more or less open space in rear, and are for the most part built along streets which are usually broad and open, relatively to the height of the buildings on each side, and which cross each other commonly at right angles. There are few localities of the town, indeed, which are not freely swept by every movement of the air.

"The greater part of the town lies upon chalk, here horizontally embedded, and, except the uppermost stratum, apparently not much fractured or fissured. But the higher portion of the town is built upon a bed of sand, gravel, loam, laminated clay, and other clays (an outlier of the lower tertiary formation of the London basin, belonging to the Thanet and Woolwich series, which here caps the chalk); and a small section on the bank of the river and in the low-lying ground rests on alluvium. With the exception, it may be (the question being as yet undetermined), of a few houses situated on the edge of the trough, which apparently holds on the higher ground the cap of sand, gravel, and clays just described, and the houses in the lowest part of the town, of which the foundations must rest near to the water-line of the chalk, the site of Gravesend, from the porosity of the soil on which it stands and from the facility with which the rainfall flows off, is very dry.

"Gravesend, in fact, apart from its proximity to the marshes on the east, occupies a site which offers peculiar facilities for securing the wholesomeness of the town. Moreover, in all except the oldest portions—namely, on the river side and about the

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High Street—the arrangement of the streets and houses in respect to openness is such as, other things being equal, to give effect to the favourableness of its position and site."

The occasion of Mr. Radcliffe's inquiry was local complaints as to prevalence of scarlet fever and enteric fever in the town, and of defects in its sanitary arrangements and administration. Upon investigation of the mortality statistics of the place, Mr. Radcliffe found that in 25 years to 1876 the mean annual rate of mortality from all causes in Gravesend had considerably diminished, and that there had been corresponding decrease in the mortality from certain infectious diseases, notably fever and diarrhoea.

Much of this decreased mortality Mr. Radcliffe attributed to progressive improvement during the 25 years, of the sanitary state of the town. But he went on to show that a great deal in the way of improvement remained to be accomplished in Gravesend before the health capacity of the place could be thought of as fully developed. In this connexion he cited under several headings certain sanitary shortcomings of Gravesend as follow:—

1. The Local Authority at the date of his inspection possessed no means for isolating cases of infectious disease, nor had it any proper provision for disinfecting infected articles of bedding and clothing.
2. Enteric fever, which was endemic in the Borough, owed its local persistence and prevalence there, as elsewhere, to excremental pollution of the soil, of the air, and partially also of the water.
3. Excremental pollution of earth, air, and water depended upon the storage, for periods varying from 2 to 30 years or more, of excremental filth in cesspools, hollowed out in the porous rock upon which the town was built; and each house or each group of houses possessed, he observed, its particular cesspool or cluster of cesspools.
4. One-fifth of the people of Gravesend at that time obtained their water supply from wells dug contiguous to and into the same stratum of rock as the cesspools. Further, Mr. Radcliffe noted that the diminution of the general mortality of the borough, and especially the diminution of the rates of mortality from fever and diarrhoea, had occurred concurrently with increased use of the waterworks water by the inhabitants.

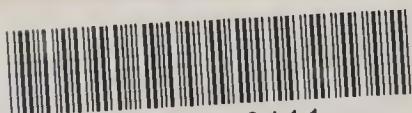
The inquiry in Gravesend which I have recently made, by direction of the Local Government Board, has had for its object to note to what extent the unwholesome conditions described by Mr. Radcliffe have been remedied by the Sanitary Authority, and to ascertain what further steps, if any, should be taken to develop to its full extent the health capacity of the town.

Referring first to the question of means for limiting the spread of infectious diseases, it has to be stated that Gravesend now possesses a "Sanatorium" situated in the parish of Denton, some two miles from Gravesend. This establishment consists of wooden huts providing two wards for patients with a nurse's room between them. Each ward is regarded as affording accommodation for five or six patients. On the same site, and adjoining the huts, is a cottage which serves as a dwelling for a caretaker and his wife, who act on occasions as attendants on the sick. The cottage contains several small rooms which have been occasionally used as wards. This "Sanatorium" and its site are not regarded as satisfactory, and a new site has therefore been purchased thereabouts by the Sanitary Authority for the erection of a proper hospital.

For the purpose of removal of persons suffering from infectious disease, the Local Authority possesses a well constructed ambulance, which is kept at the stone-yard, Milton, in a shed which has been specially erected for it.

But Gravesend has not provided the means for properly disinfecting by heat bedding and clothing which have become infected. It has been the custom of the Sanitary Authority to destroy by burning such articles as have been exposed to the infection of small-pox, and to pay the cost incurred. This course has not been adopted with regard to articles that have been exposed to scarlet fever, and thus an important means of preventing the extension of epidemic disease has been wanting.

Enteric fever is, as at the date of Mr. Radcliffe's visit, endemic in the borough, though the amount of it has continued to diminish. This improvement here noted must be referred rather to further extension of the water company's service than to sanitary works executed by the Sanitary Authority, for opportunities for the excremental pollution of the soil and of the air are almost as abundant as at the time when Mr.



Radcliffe inspected the town, the main difference being that the well water of the town has fallen still further into disuse.

As regards means of excrement disposal, Gravesend is still almost wholly dependent upon cesspools. Such few sewers as exist are, as in 1876, mainly confined to the lower part of the town, and they discharge their contents, as before, into the river, in all instances but one, above low-water mark. They are, with one exception, old drains constructed of brickwork, which were intended originally to get rid of surface and storm water only, but the drains of some 60 dwelling-houses and of 10 slaughter-houses have as time has gone on been directed into them. In addition, certain houses situated along the river, as on the north side of West Street, are drained independently to the river, discharging their contents above low-water mark. They contribute with the "sewers" to the maintenance of a very considerable nuisance on the foreshore.

Cesspools, therefore, are the chief means of disposal of excremental filth in Gravesend. They are, as formerly, excavations in the chalk varying in depth from a few feet to as many as 60 feet. Near to the river they are commonly sunk as low as the water line in the chalk. Cesspools serving water-closets within private houses are now and again domed over, but are not always ventilated. Cesspools in the courts and alleys, on the other hand, are, in the majority of cases, left open, and their emanations mingle freely with the atmosphere. Such cesspools, however, placed as they commonly are in proximity to dwelling-houses, constitute a most serious nuisance.

As examples of the position of cesspools in relation to dwelling-houses, I may note—

Hendon's Court, at the rear of the south side of West Street, consisting of two rows of houses of three storeys placed at right angles to each other, and making with the houses in West Street three sides of an oblong, measuring 72 feet in length and 10½ feet in breadth between the houses in West Street and the opposite houses in Hendon's Court. In this confined space are two open cesspools, the one is situated in close contact with a house on one side of Hendon's Court, and 6 feet distant from a house on the adjoining side. This cesspool has a capacity of 480 cubic feet, and contained at the time of my visit 360 cubic feet of contents. The other cesspool is situated in a recess against the backs of two houses in West Street, 2½ and 2½ feet from them respectively, and is overlooked by 10 windows and 2 doors in these houses. This cesspool has a capacity of 840 cubic feet, and contained at the time of my visit 520 cubic feet of filth. Both smelt offensively, and the inmates of the adjoining houses complained of the odour, the occupier of one of the houses in West Street stating that she was frequently obliged to place a wet rag over the windows to keep out the stench.

Pipe Court, immediately at the back of Hendon's Court, containing a number of irregularly arranged houses. In the rear of two houses (Nos. 3 and 4, Pipe Court) is an open cesspool having a capacity of 924 cubic feet, and containing at the time of my visit 588 feet of contents, which smelt most offensively. The cesspool is separated from the houses by a narrow area, and is between 4 and 5 feet distant from the windows of these two houses. The inmates complained of the stench, and stated that the men of the house were frequently unable to wash themselves in the arca, and that it was often necessary to keep the windows closed, on account of it.

As regards cleansing, the deepest cesspools never require emptying, while those which are more shallow are emptied every two or three years. The contents are removed in pails, which, in most cases, owing to the situation of the cesspool, have to be carried through the house. As at the time of Mr. Radcliffe's visit, this duty is not undertaken by the Local Authority, who merely require that the removal shall take place at night, and that deodorants shall be used during the process, but is performed for house occupiers by a cesspool scavenger, who charges usually at the rate of 25s. a load.

The ability of cesspools for polluting well water has, as will have been evident from the foregoing account of them, been in no way lessened since Mr. Radcliffe inspected Gravesend, and but for the circumstance that there has occurred since that date general adoption of the waterworks supply, with a corresponding disuse of well water, the inhabitants of the place would be now incurring the gravest danger in the event of importation of cholera there. The 52 wells remaining in the town, after "closure," disuse, or conversion into cesspools of many hundreds of wells, supply little more than 100 houses.

As illustrative of the circumstances of wells still in use, it may be noted that in the rear of a house in Spencer Street is a well of a depth of 65 feet situated within 21 feet of a cesspool.

In the rear of two houses in Pilot's Place is a space measuring 36½ feet × 22 feet containing five cesspools, and one well 46 feet deep situated but 12 feet from the nearest cesspool.

In the rear of two houses in Bath Street and three houses in Church Street is a well situated 12½ feet from a cesspool.

In a yard in the rear of a house in The Terrace is a well situated 14 feet from a cesspool.

With regard to the water company's water, the chief objection which can be taken to it is its method of supply. For purposes of water service the town has been divided out into 9 districts, in each of which the mains are charged once daily for periods

varying in different districts from one to three hours. In some parts of the town, where no provision has been made for domestic storage of the water, the water is delivered to a standpipe common in each instance to a number of dwellings. This method of supply is productive of much inconvenience; these localities are for a considerable portion of the day either without water or are dependent upon such supply as the inhabitants may have collected in their pails and pans. The effect of this arrangement on the cleanliness of courts and alleys was sufficiently obvious at the dates of inspection.

Cleansing roads and highways and removal of house refuse is effected by the Sanitary Authority, who employ their own men, carts, and horses on this service. The main thoroughfares are swept daily, and other parts of the town twice a week, and the sweepings are removed direct to farms outside the town. Complaint is, however, made concerning the need for the better cleansing of roads. House refuse which is collected weekly, is deposited in railway trucks on a siding of the railway and removed into the country. Recently some effort was made to introduce a system of daily collection of house refuse, but this has fallen through, owing, it is stated, to the omission of the inhabitants to place it each morning on the pavement.

While, therefore, improvements have taken place in Gravesend in respect of the provision of means for isolating cases of infectious disease, and of provision of improved water supply, there remains the very unsatisfactory method of disposal of excremental filth, and this is not the only sanitary shortcoming meriting criticism.

The Local Authority have failed to utilise to the utmost for the improvement of the older parts of the town the powers conferred upon them. These localities have certainly been paved, and have now better opportunities for surface drainage than formerly, but they still retain their original faults of construction, and hence a large number of houses are now tenanted which from their arrangement in narrow and often closed courts and from their defective ventilation cannot be regarded as healthy habitations.

As an example may be quoted an area bounded by West Street, Church Street, High Street, and Bath Street, and measuring about 700 x 200 feet, having, besides the houses fronting these streets, the following courts and alleys:—

Passengers Court, situated between West Street and Church Street, is entered by a narrow underway. It consists of two rows of houses, separated by a passage 15½ feet wide. The houses, 11 in number, are constructed either of brick or weather boards, and possess no back premises or opportunity for through-ventilation. At the end of the court are two houses known as Adelphi Buildings, which contribute to prevent the circulation of air through the court. Back-to-back with houses in this court are two houses in Caroline Court, the entrance to which is from West Street, while the court is closed at its other end by privies and cesspool.

Adjoining Caroline Court is Champions Alley, which has communications by underways with West Street and Church Street. Situated in it are two brick houses of three storeys in height having no back yards or through ventilation.

Stoney Alley is situated a little further to the east, and extends from West Street to Church Street. It consists of nine old weather-boarded houses without open space at the rear, and with the exception of the attics without through-ventilation, and which are faced by one house and a passage only 4½ feet wide.

Adjoining Stoney Alley is Pump Alley, consisting of 10 houses in two rows, constructed of weather boards or bricks and laths and plaster, separated by a passage 9½ feet wide, to which access is gained by a narrow and tortuous passage in West Street or by a narrow passage in Church Street. Only three houses possess through ventilation. In the centre of the court some of the houses have been pulled down and on one side replaced by privies and cesspool.

Further east is Chapel Lane, which is entered by an underway from West Street and extends to Church Street. The houses in this court are in two rows, and in the centre of the court a clearance has been effected by a fire. Some of these houses are old and in bad repair. At the back of one row of three houses on the west side is a passage a little over 6 feet wide and 22 feet long, at one end of which is an open cesspool having a capacity of about 380 cubic feet, and at the other end of this passage and situated beneath the first floor of a house is another cesspool of about 290 cubic feet capacity. On the west side of the court the houses have a small back yard in which is a third cesspool having a capacity of about 560 cubic feet.

Further east is New Court, which is also approached under a covered way from West Street and opens into Church Street; it is mainly a means of communication between the two streets, but has on its west side two small houses provided with through-ventilation, but behind these and separated from them by a passage little less than 5 feet wide is another row of four houses known as John's Place. The latter are without space at the rear or means of through-ventilation.

Between these houses and the backs of the houses in High Street are situated Sutties Alley and Hole-in-the-Wall Court, the former is approached by a covered way from West Street and has six houses all without open space at the rear or through-ventilation and in close proximity to a cesspool. The latter court occupies the remaining space in rear of High Street, and is merely an irregularly-built passage containing a public-house.

The Legislature has provided ample means for the improvement of such areas, but the Local Authority have not yet availed themselves of these opportunities for adding to the healthiness of their town.

RECAPITULATION.

The following sanitary improvements have been effected in Gravesend since 1877 :—

- (a.) Provision of means for the removal, and of some means for the isolation, of persons suffering from infectious diseases.
- (b.) Extension of the water company's water-supply over the greater part of the town, and closure of many contaminated wells which formerly supplied water for domestic purposes.
- (c.) Paving of courts and alleys, and better surface drainage of the town.

The following insanitary conditions still exist :—

- (a.) System of storing vast accumulations of excremental filth in cesspools in proximity to inhabited dwelling-houses.
- (b.) Pollution of foreshore by certain house drains and sewers, giving rise to nuisance.
- (c.) Unsatisfactory method of water supply to many courts and alleys, by reason of which these localities are without sufficient water supply.
- (d.) Ill-ventilated, badly constructed, and badly arranged dwelling-houses, especially in the lower part of the town.

In reference to the sanitary wants of Gravesend here indicated may be quoted the remarks of the Registrar-General, who, writing of the epidemic prevalence of cholera in 1848-49, states with regard to the condition of Gravesend at that time, "there are "no available common sewers, and the sanitary state of the town must be inevitably "bad; the whole of the surface and underground drainage falls into rudely con- "structed cesspools." With slight modification these remarks are now equally applicable. There is, therefore, especial need at a time when England is threatened with invasion by cholera that the Local Authority should forthwith exercise their full powers for the improvement of the town.

(Signed) SHIRLEY F. MURPHY.
